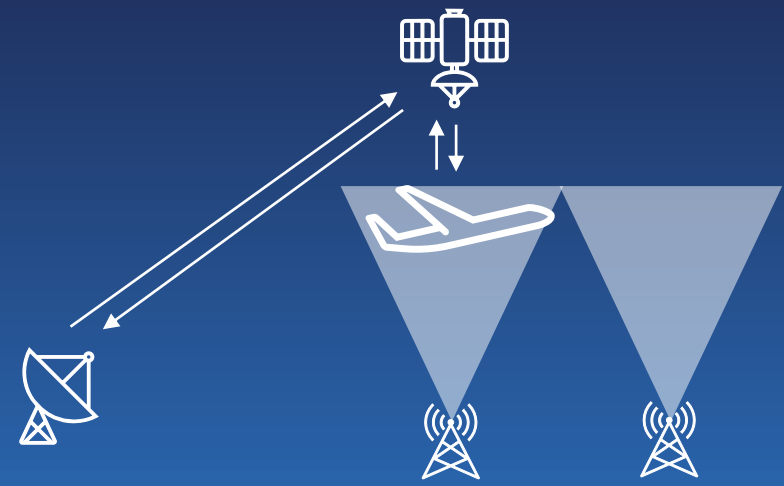
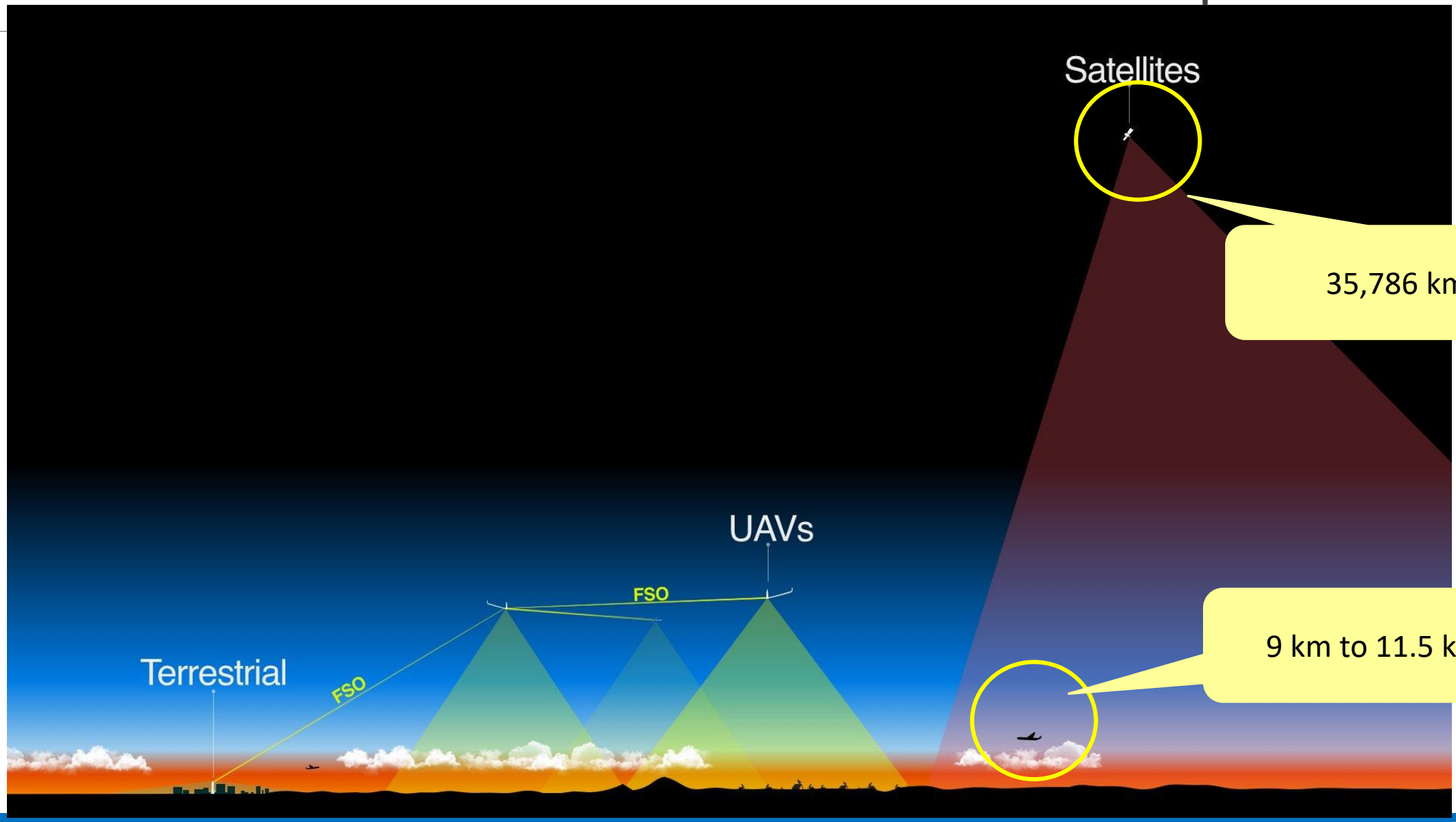


Beginners:

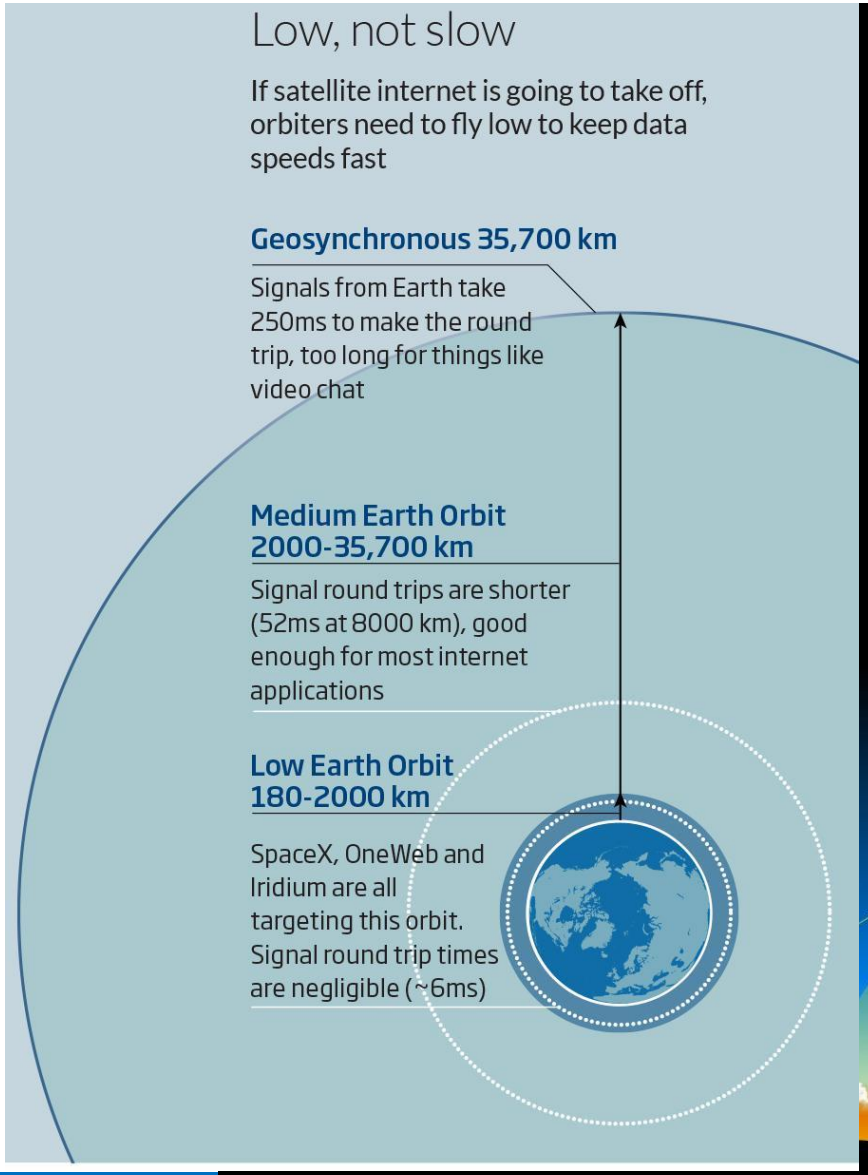
Connectivity in Planes

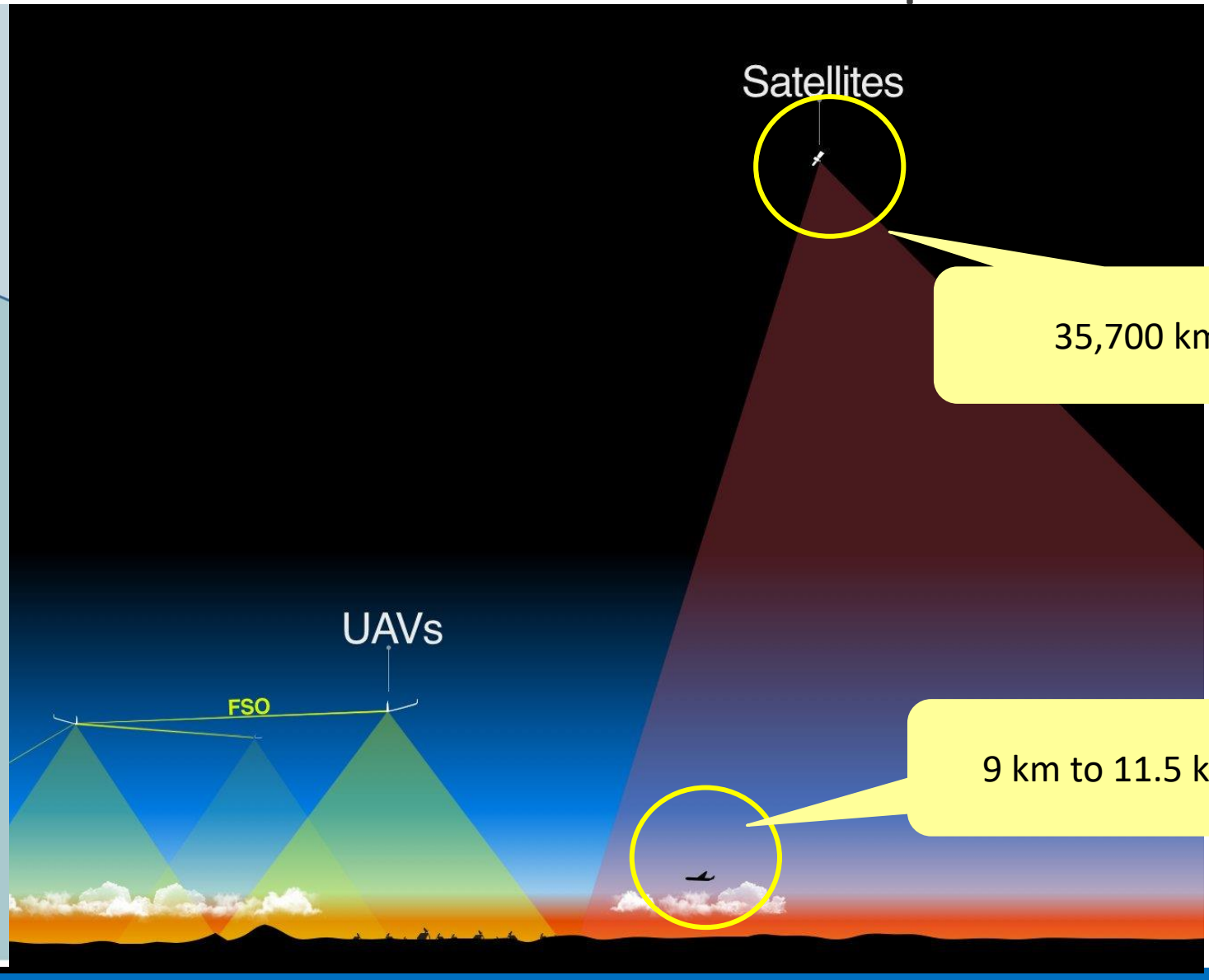
@3g4gUK

How hard can it be to connect the planes?

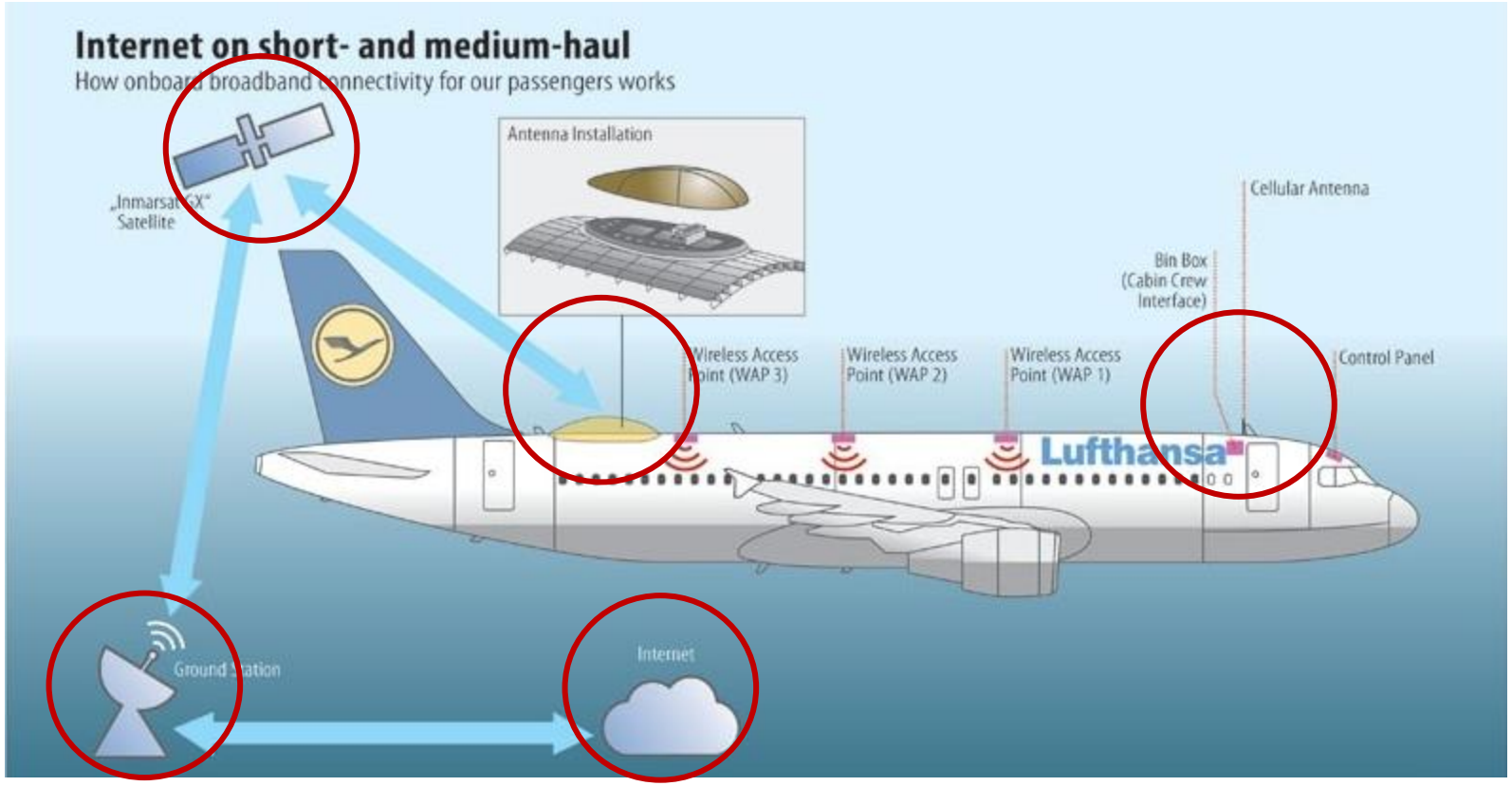


How hard can it be to connect the planes?

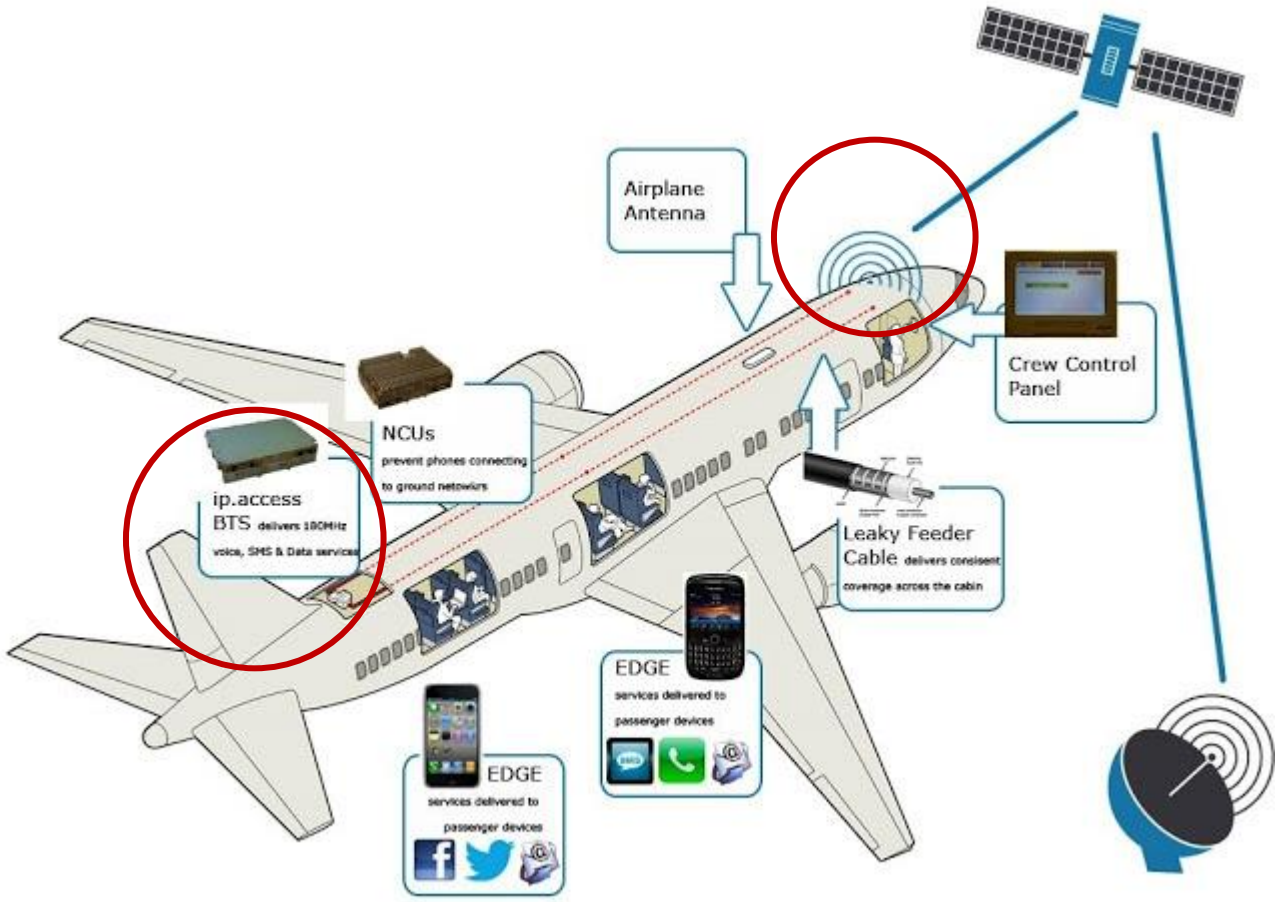




Wi-Fi on Planes



Small Cells on Planes

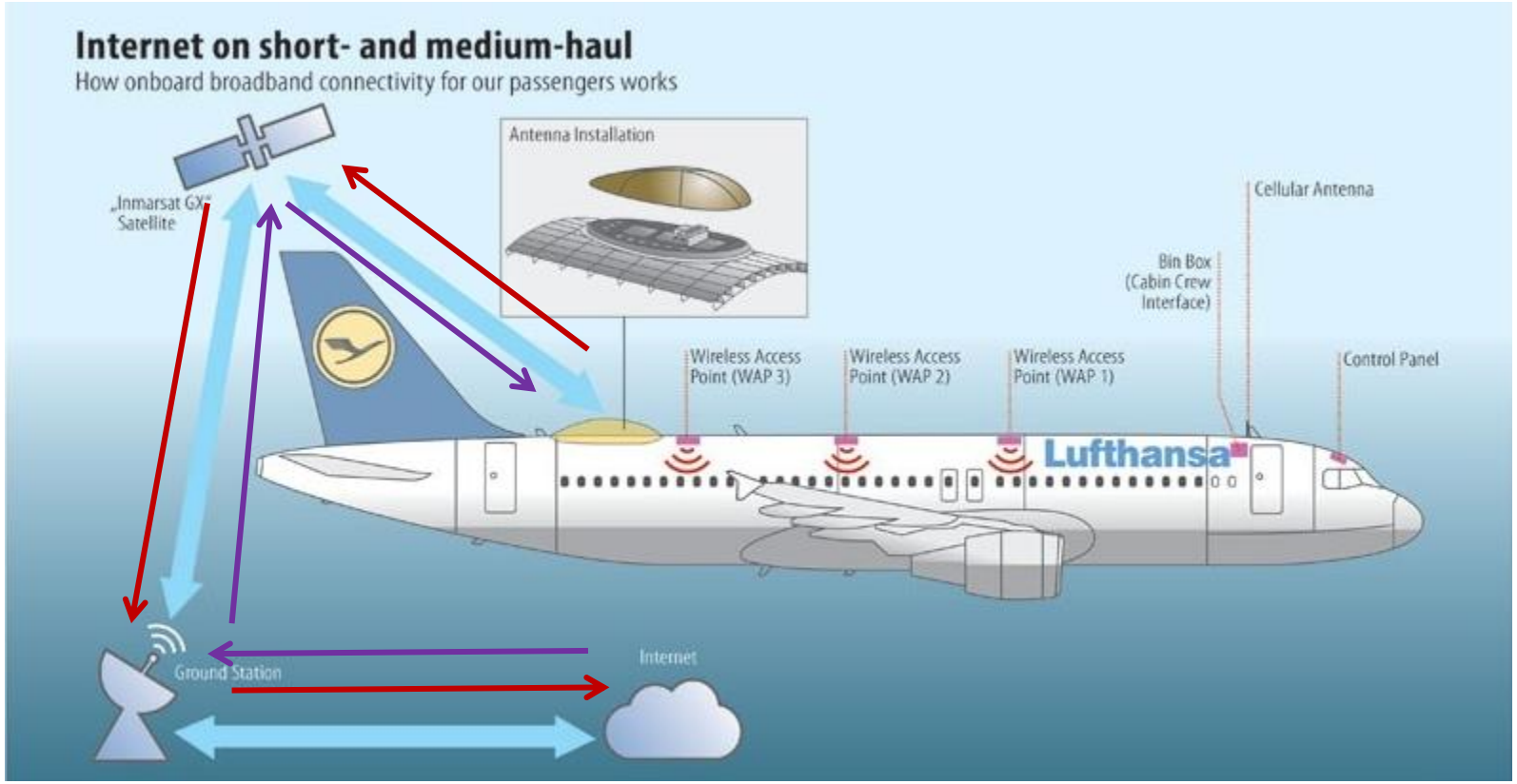


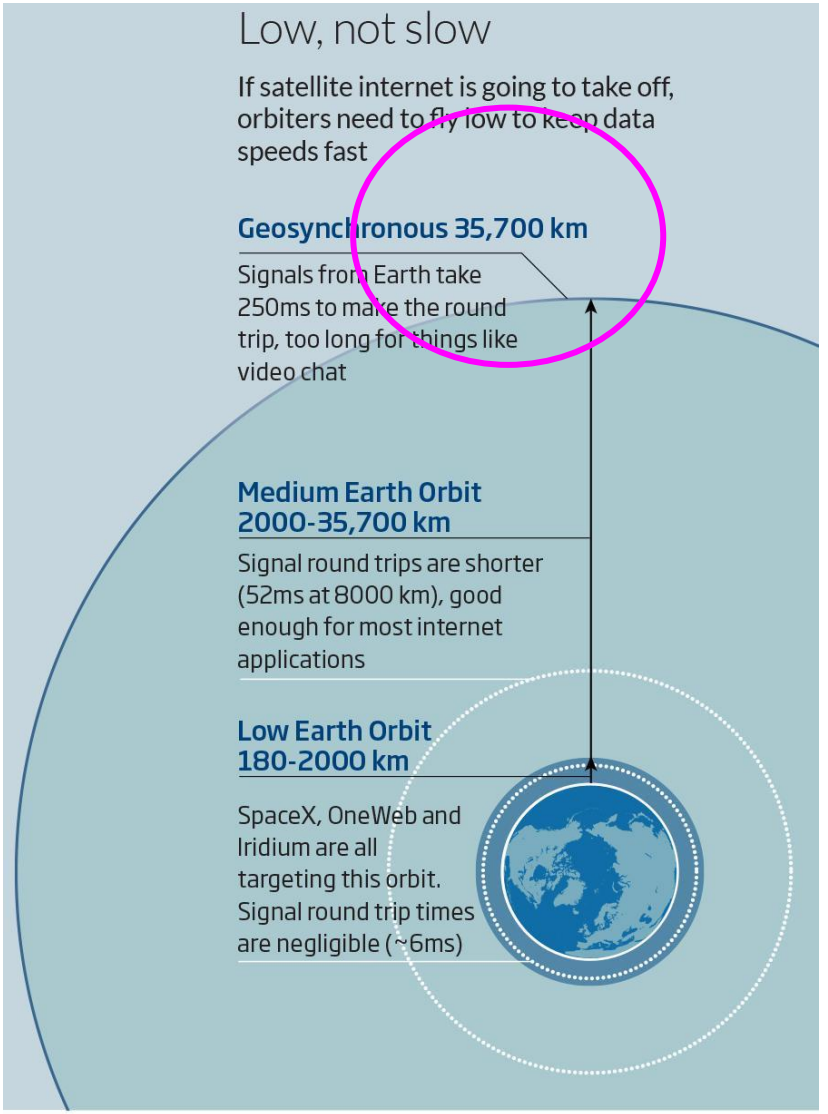
Source

Old ETSI Whitepaper: '[GSM operation onboard aircraft]' makes interesting reading

Speedtest on Plane Wi-Fi

Calculating the latency and ping timing

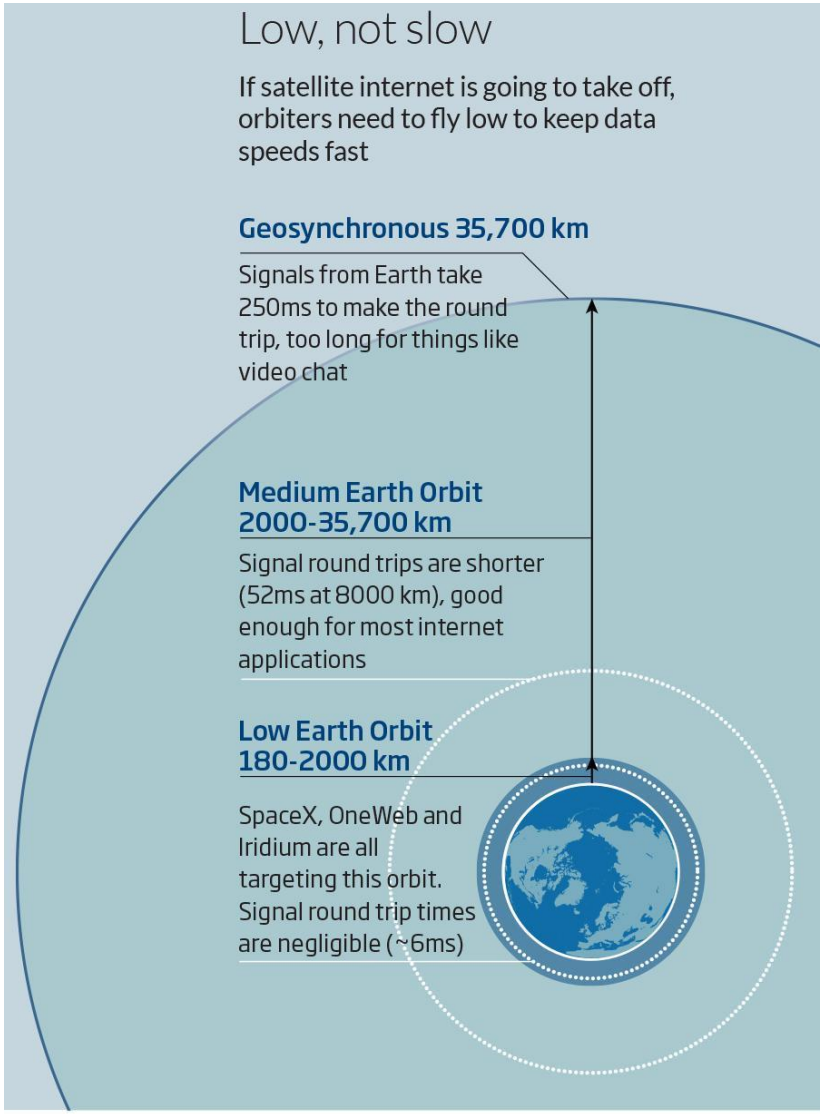




Latency is defined as the time it takes for a source to send a packet of data to a receiver. In simple terms, half of Ping time

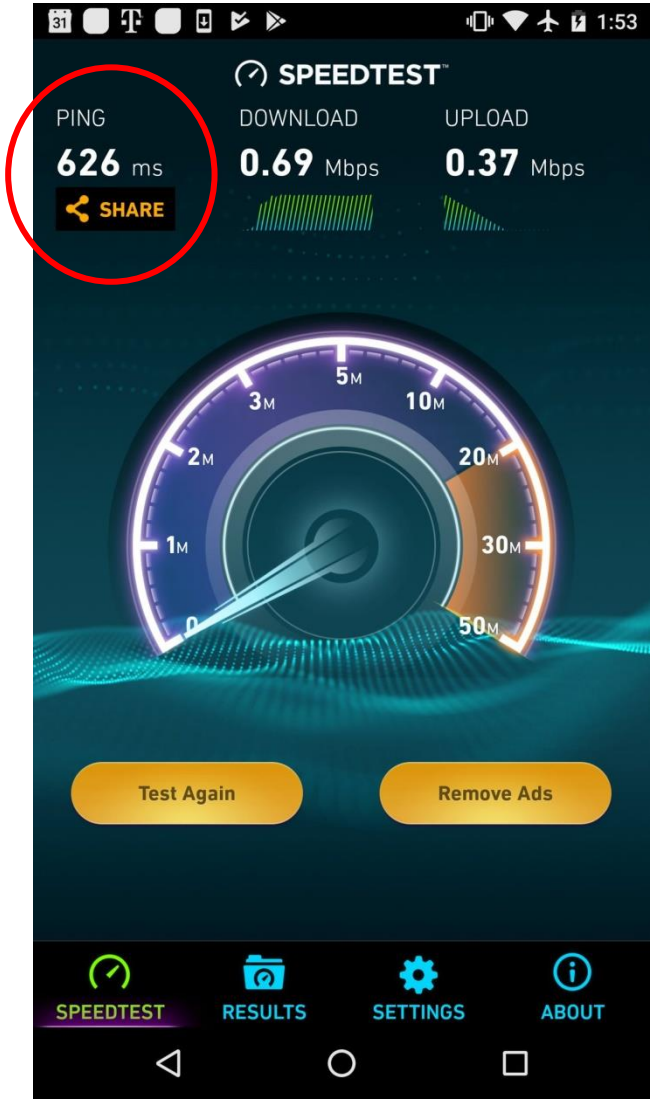
Calculating the latency and ping timing

- Speed of light = 3 x 10^8 m/s or 3 x 10^5 km/s
- RF signals travel the same speed as light
- Ground station to satellite = 35786 km / 3 x 10^5 km/s = 120 ms
- Satellite to plane approx. 120ms
- Ground station to server approx. 10ms
- Plane to WiFi approx 50ms (processing delays)
- Total latency approx. = 300ms
- Ping time, at least 600 ms approx.



Speedtest on Plane Wi-Fi

Speedtest on Plane Wi-Fi

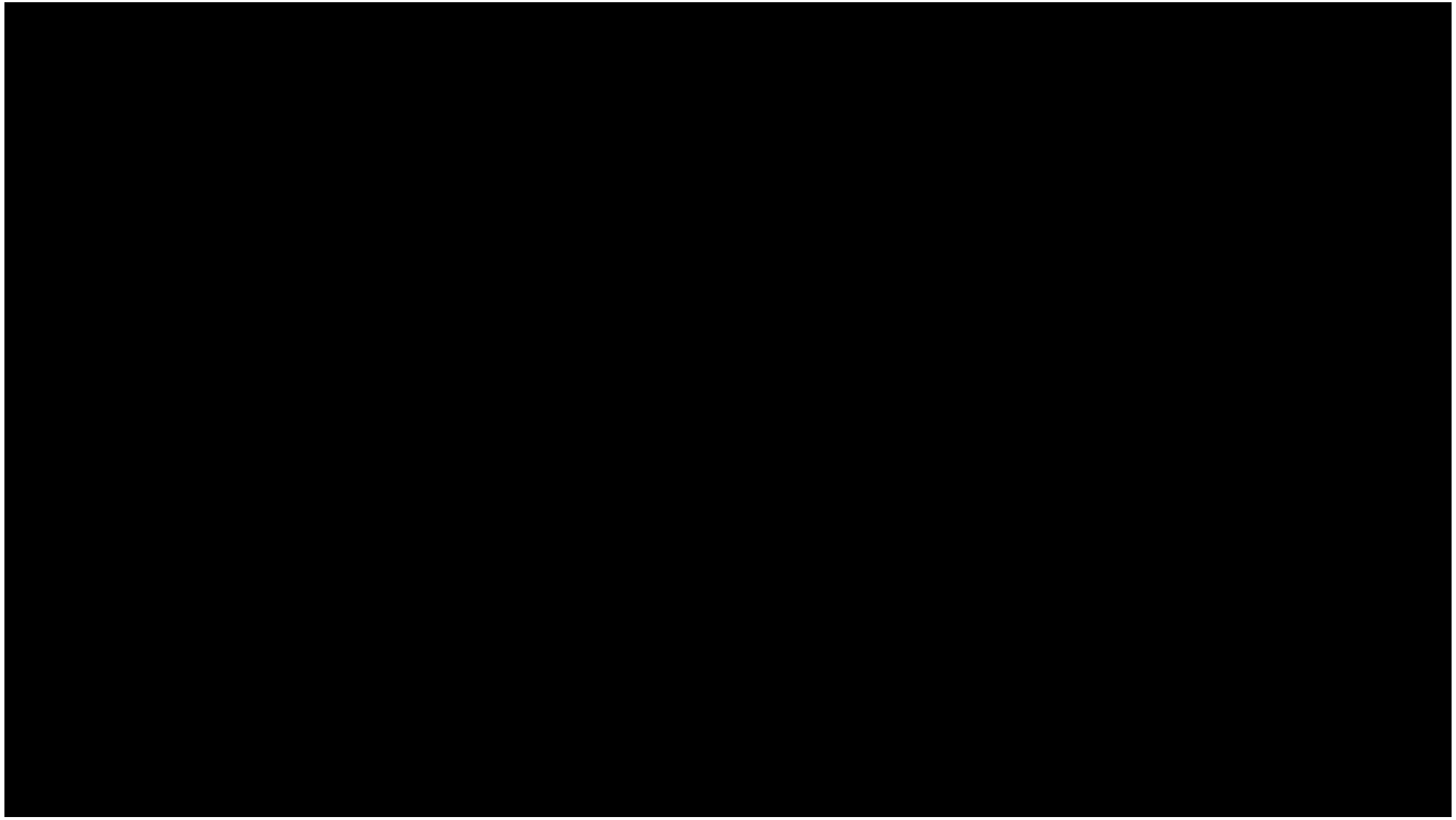


Source: Azar T (@wrangulars): I measured @GogoWiFi at 37000 ft in air,offered from @TMobile to it's 1+ customers.

Improving plane data speeds & reducing latency

[Deutsche Telekom and Inmarsat partner to deliver European Aviation Network]

European Aviation Network Promotional Video



YouTube

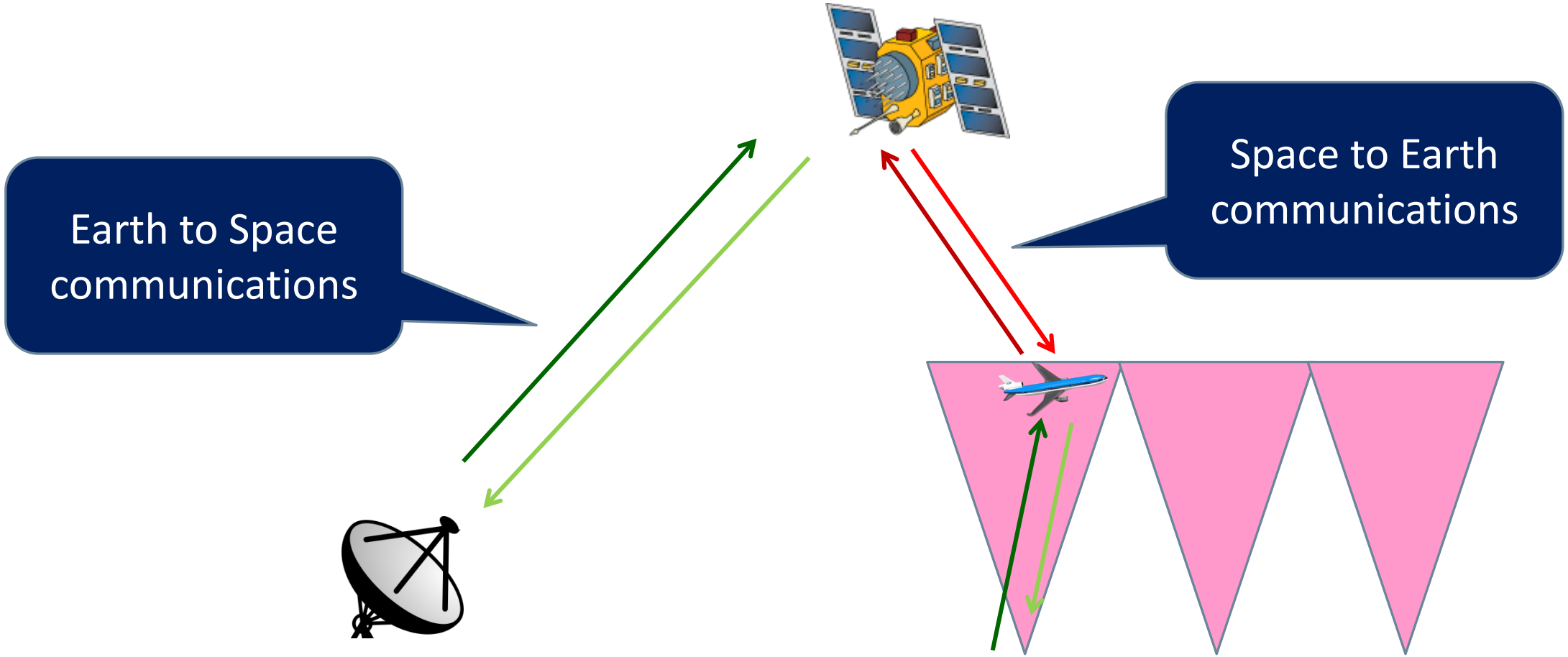
Improved Connectivity in Planes

2 x 15MHz S band will be used by Deutsche Telekom for complementary coverage through ground network

Source

- Speeds of up to 75Mbps with same latency as LTE network

Spectrum Management in European Aviation Network



- 2x15MHz pair used for communication in each direction

Goonhilly: Example of Satellite Earth Station

Source

Thank You

To learn more, visit:

3G4G Website – https://www.3g4g.co.uk/

3G4G Blog – https://blog.3g4g.co.uk/

Telecoms Infrastructure Blog – https://www.telecomsinfrastructure.com/

Operator Watch Blog – https://www.operatorwatch.com/

Connectivity Technology Blog – https://www.connectivity.technology/

Free 5G Training – https://www.free5gtraining.com/

Free 6G Training – https://www.free6gtraining.com/

Follow us on Twitter: https://twitter.com/3g4gUK

Follow us on Facebook: https://www.facebook.com/3g4gUK/

Follow us on LinkedIn: https://www.linkedin.com/company/3g4g

Follow us on SlideShare: https://www.slideshare.net/3G4GLtd

Follow us on YouTube: https://www.youtube.com/3G4G5G